## REMARKS

This reply is submitted in response to the Office Action dated June 5, 2006. The amendments above and remarks below address the issues raised in the Office Action, and thereby place the application in condition for allowance.

### Claim Rejections under 35 U.S.C. §101

Claims 60 and 61 stand rejected under 35 U.S.C. §101 as being directed to non-statutory subject matter. Applicants respectfully traverse the rejections as they do not comport with current case law or the Patent Office's own procedures regarding patentability under §101.

Claim 60 recites a computer system for performing a fast Fourier transform on N ordered inputs that comprises one or more vector processors configured to transform, via loop means, the inputs into to a set of Fourier transform outputs having a correct ordering.

The MPEP deems a claim that defines a useful machine as statutory subject matter. In particular, MPEP 2106(IV)(B)(2)(a) states:

> If a claim defines a useful machine or manufacture by identifying the physical structure of the machine or manufacture in terms of its hardware or hardware and software combination, it defines a statutory product. See, e.g., *Lowry*, 32 F.3d at 1583, 32 USPQ2d at 1034-35; *Warmerdam*, 33 F.3d at 1361-62, 31 USPQ2d at 1760.

Claim 60 comports with the above guideline as it defines a "machine" that includes specific hardware structures, namely, vector processors. As known in the art, a vector processor is a piece of *hardware* that is able to run mathematical operations on multiple data elements simultaneously. *Wikipedia*, http://en.wikipedia.org/wiki/Vector_processor.

Further, the vector processors are configured to execute a specific task so as to generate tangible results. More specifically, they are configured, via first and second loop means, to provide Fourier transform outputs. MPEP 2106(IV)(C)(2)((2)) states

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...USPTO personnel shall review the claim to determine it produces a useful, tangible, and concrete result. In making this determination, the focus is not on whether the steps taken to achieve a particular result are useful, tangible, and concrete, but rather on whether the final result achieved by the claimed invention is "useful, tangible, and concrete."

Claim 60 comports with the above guideline as the final result, namely, Fourier transform ordered outputs, are useful, tangible, and concrete. Following the guidelines enumerated in this section of the MPEP, the result is concrete as it is predictable and repeatable (MPEP 2106(IV)(C)(2)((2))(c)). Each time the claimed invention is used, it will produce ordered transform outputs. The result is tangible as it is a real world result (MPEP 2106(IV)(C)(2)((2))(b)) in the form of outputs that are ordered. The result is also useful in that the ordered outputs are specific, substantial, and credible (MPEP 2106(IV)(C)(2)((2))(a)). The ordering of the outputs allows them to used with any additional post-processing of the outputs, as described in the Applicant's specification on page 5.

Not only do the claims recite statutory subject matter under the Patent Office guidelines, but they also comport with the case law.

The Court of Appeals for the Federal Circuit (CAFC) has held that a claim directed to a machine formed from a combination of related elements that provides "a useful, concrete and tangible result" is statutory subject matter under §101. *Alappat v. Averill*, 33 F.3d 1526, 1544 (Fed. Cir. 1994). For example, in *Alappat*, the Court held that a claim directed to a machine that converts data representing sample magnitudes of an input waveform, via mathematical operations, into pixel illumination intensity data is statutory subject matter under §101. The Court reasoned that the claim was directed to a machine, which is one of the four categories of patentable subject matter, and hence it appeared on its face to be directed to §101 subject matter. Further, the claim did not recite a "disembodied mathematical concept which may be characterized as an "abstract idea," but rather a specific machine to produce a useful, concrete, and tangible result." Id at 1544. In particular, the Court noted that the pixel illumination data could be used to produce a smooth waveform display. Id. The Court emphasized that "[T]he fact that the four claimed means elements function to transform one set of data to another through what may be viewed as a series of mathematical

calculations does not alone justify a holding that the claim as a whole is directed to nonstatutory subject matter." Id.

In *State Street Bank & Trust Co. v. Signature Financial Group, Inc*, the CAFC further reiterated that claims directed to transformation of data into useful, tangible results are statutory subject matter under §101. More specifically, the Court held that "the transformation of data, representing discrete dollar amounts, by a machine through a series of mathematical calculations into a final share price, constitutes a practical application of a mathematical algorithm, formula, or calculation, because it produces "a useful, concrete and tangible result"— a final share price momentarily fixed for recording and reporting purposes and even accepted and relied upon by regulatory authorities and in subsequent trades." *State St. Bank & Trust Co. v. Signature Fin. Group*,149 F.3d 1368, 1373 (Fed. Cir. 1998).

Similar to *Alappat* and *State Street Bank*, Applicants' claimed invention is directed to a "machine," in the form of a system comprising a plurality of vector processors, that is on its face statutory subject matter. More specifically, similar to *Alappat* and *State Street*, claim 60 recites specific structures (vector processors in claim 60, and processing means in the form of arithmetic logic circuits in *Alappat* and *State Street*) that transform one set of data (ordered inputs in claim 60, sample magnitudes of an input waveform in *Alappat*, and discrete dollar amounts in *State Street*) into a tangible and useful output (fast Fourier transform ordered outputs in claim 60, pixel illumination intensity data in *Alappat*, and final share price in *State Street*).

Accordingly, Applicants respectfully request that the rejection of claims 60 and 61 be withdrawn.

## Conclusion

In view of the above amendment, Applicant believes the pending application is in condition for allowance.

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Respectfully submitted,

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